

COMPLETE LISTING OF CLAIMS

IN ASCENDING ORDER WITH STATUS INDICATOR

1-20. (Canceled)

21. (New) An optical pickup apparatus comprising:

a polarization hologram; and wherein said polarization hologram of said optical pickup apparatus comprises:

a transparent substrate;

a birefringence layer of a stretched organic polymer material provided on the transparent substrate in a periodic grating pattern, the birefringence layer having different refractive indexes for two orthogonal polarizing directions of a reflection beam; and

an isotropic overcoat layer provided to enclose the birefringence layer therein, the polarization hologram diffracting the reflection beam in predetermined diffracting directions depending on the wavelength of an incident reflection beam.

22. (New) The optical pickup apparatus according to claim 21, wherein the birefringence layer of the polarization hologram is configured with a stretched organic polymer film, and the organic polymer material of the birefringence layer being selected from among polycarbonate, polyvinylalcohol, polymethylmethacrylate, polystyrene, polysulfone, polyethylsulfone, and polyimide.

23. (New) The optical pickup apparatus according to claim 21, wherein the birefringence layer of the polarization hologram is configured with a heated and stretched polyimide film.

24. (New) The optical pickup apparatus according to claim 21, wherein the polarization hologram is configured to substantially satisfy the following requirements

$$(n_p - n_l)h = mL$$

$$(n_s - n_l)h = (m \pm 1/2)L$$

where n_p is a refractive index of the birefringence layer for a p-polarized light of the reflection beam, n_s is a refractive index of the birefringence layer for an s-polarized light of the reflection beam, n_l is a refractive index of the isotropic overcoat layer, h is a depth of the periodic grating pattern, L is a wavelength of the reflection beam, and m is an integer ($m = 0, \pm 1, \pm 2, \dots$).

25. (New) The optical pickup apparatus according to claim 21, wherein the polarization hologram is configured to substantially satisfy the following requirements

$$(n_p - n_l)h = (m \pm 1/2)L$$

$$(n_s - n_l)h = mL$$

where n_p is a refractive index of the birefringence layer for a p-polarized light of the reflection beam, n_s is a refractive index of the birefringence layer for an s-polarized light of the reflection beam, n_l is a refractive index of the isotropic overcoat layer, h is a depth of the periodic grating pattern, L is a wavelength of the reflection beam, and m is an integer ($m = 0, \pm 1, \pm 2, \dots$).

26. (New) The optical pickup apparatus according to claim 21 wherein the birefringence layer has a thickness larger than a depth of the periodic grating pattern of the birefringence layer, and the isotropic overcoat layer is not in contact with the transparent substrate.

27. (New) The optical pickup apparatus according to claim 21 wherein said polarization hologram comprises a second transparent substrate provided on the isotropic overcoat layer to cover the birefringence layer, and the isotropic overcoat layer being an isotropic resin adhesion layer, and the second transparent substrate being fixed to the birefringence layer by using the isotropic resin adhesion layer.

28. (New) The optical pickup apparatus according to claim 21 wherein the isotropic overcoat layer is provided by applying an isotropic resin to the birefringence layer.

29. (New) The optical pickup apparatus according to claim 21 wherein the stretching of the organic polymer material creates a difference between the refractive indexes of the birefringence layer for two orthogonal polarizing directions of an incident reflection beam.

CLAIMS

 There are no amendments to the claims.

 X A complete listing of all claims ever present in this case in ascending order with status identifier is presented in a separate section.